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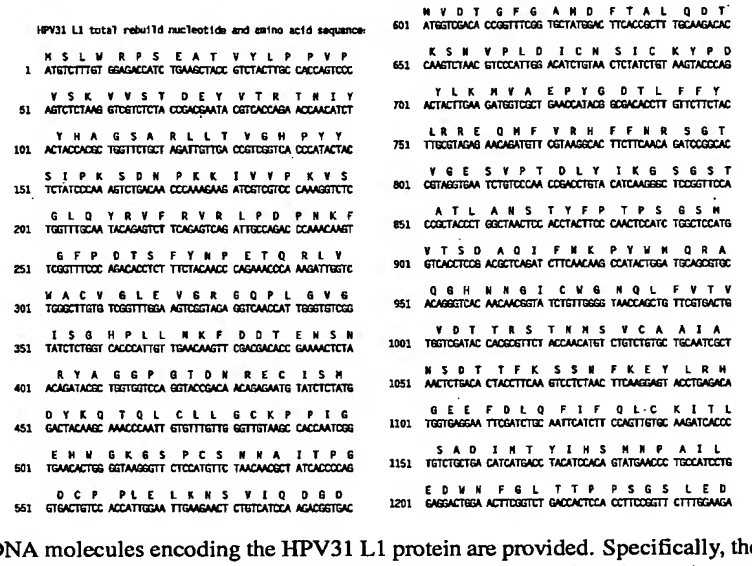
(54) Title: OPTIMIZED EXPRESSION OF HPV 31 L1 IN YEAST



(57) Abstract: Synthetic DNA molecules encoding the HPV31 L1 protein are provided. Specifically, the present invention provides polynucleotides encoding HPV31 L1 protein, wherein said polynucleotides are free from internal transcription termination signals that are recognized by yeast. Also provided are synthetic polynucleotides encoding HPV31 L1 wherein the polynucleotides have been codon-optimized for high level expression in a yeast cell. The synthetic molecules may be used to produce HPV31 virus-like particles (VLPs), and to produce vaccines and pharmaceutical compositions comprising the HPV31 VLPs. The vaccines of the present invention provide effective immunoprophylaxis against papillomavirus infection through neutralizing antibody and cell-mediated immunity.

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